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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/362,521	07/28/1999	YUNZHOU LI	10360/027001	6953

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EXAMINER

PRIETO, BEATRIZ

ART UNIT	PAPER NUMBER
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2142

DATE MAILED: 06/16/2003

17

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/362,521

Applicant(s)

LI, YUNZHOU

Examiner

B. Prieto

Art Unit

2142

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 17 April 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-13,15-20 and 22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-13,15-20 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

***DETAILED ACTION***

1. This communication is in response to Brief filed 04/23/03, claims 1-7, 9-13, 15-20 & 22 remain pending and are hereby set forth for examination.

2. Finality of the rejection of the last Office action is withdrawn to correct noted informalities: (i) claims 11-12 are dependent on a cancelled claim 8, correction is required, these will be treated as being dependent on claim 1, (ii) claim 1 reads "and tables corresponding to a short path...", limitation will be interpreted as recited on claim 17, that is "and *the* tables corresponding to a short path..." see summary page 2, lines 20-24.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. §103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 6-7, 9, 13, 15-20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deering, S.: Multicast routing internetworks and extended LANS in view of Shah, et. al. (Shah): Performance under a failure of Wide-Area datagrams network with unicast and multicast traffic routing.

Regarding claim 1 Deering teaches substantial features of the invention as claimed, teaching

receiving link state advertisements by a router link state information from all routers attached to that link in the network (single destination), thereby learning all the link state and all the routers attached to that link from which they can determine the complete topology of the internetwork, the each router computing the shortest path tree spanning tree (section 6, page 98-99, section 4, page 91-92);

extending the link-state routing to support shortest-path multicast routing by receiving link state advertisements from routers in a network and constructing a multicast routing table

from the received link state packets, the table corresponding a short path tree through multicast routers (section 6, page 98-99);

although prior art teaches learning all the link state and all the routers attached to that link and constructing unicast collection or report using received membership reports from routers on the network, it does not explicitly teach constructing an unicast routing table from received link state advertisements;

Shah teaches constructing a unicast routing table from received link state packets, wherein said tables corresponds to a short path tree from multicast routers (section 3.3);

It would have obvious to one ordinary skilled in the art at the time the invention was made to utilize Deerings teachings for learning all the link state and all the routers attached to that link using received membership reports from routers on the network with Shah teachings for constructing a unicast routing table from received link state packets, wherein said tables corresponds to a short path tree from multicast routers, motivation to maintain a current image of the network topology using a protocol independent protocol based on unicast and multicast routing tables yet independent of any particular unicast routing protocol, as taught by Shah.

Regarding claim 2, performing reverse path forwarding using the multicast routing table (Shah: section 2.1 and 3.3).

Regarding claim 3, the link state advertisements comprise OSPF (Open Short Path First) link state advertisements (Shah: sections 2.2, 3.3, and section 2.1).

Regarding claim 4, the link state advertisements comprise MOSPF (Multicast Open Short Path First) link state advertisements (Shah: sections 2.1, and 3.3).

Regarding claim 6, constructing the multicast routing table comprises using Dijkstra's short path algorithm (Deering: section 2.2 and 3.3).

Claim 5, discussed below.

Regarding claim 7, correlates addresses of destination multicast capable routers with addresses of multicast capable routers on a short path tree of multicast capable routers (Deering: section 3, section 4).

Claim 8 cancelled.

Regarding claim 9, configuring PIM (Protocol Independent Multicasting) to use the multicast routing table (Shah: section 2.1).

Claims 10-12 discussed below.

Regarding claim 13, substantially the same as claims 1-7 when combined, same rationale of rejection is applicable.

Claim 14 cancelled.

Regarding claims 15-16, these claims are substantially the same as claim 3 and 11-12, respectively, discussed above, same rationale of rejection is applicable.

Regarding claim 17, this claim comprises the computer program product, disposed on a computer readable medium, for multicast routing, the computer program including instructions for causing a computer to perform the method discussed on claim 1, same rationale of rejection is applicable the apparatus, i.e. software implementation.

Regarding claims 18-20, these claims are the computer program product disposed on a computer readable medium for performing the method claims discussed above, the computer program including instruction for causing a computer to perform the method claims, specifically, claims 2, 4 and 7, respectively, same rationale of rejection is applicable.

Regarding claims 20,22, these claims are the computer program product disposed on a computer readable medium for performing the method claims discussed above, the computer program including instruction for causing a computer to perform the method claims, specifically, claims 9, and 11-12, ~~respectively~~, same rationale of rejection is applicable.

5. Claims 10-12 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deering, S., in view of Shah, et. al. (Shah), in further view of Haggerty et. al. (Haggerty) U.S. Patent No. 6,331,983

Regarding claim 10, however the above prior art does not explicitly teach performing a PIM RPF check function;

Haggerty teaches providing a routine for a PIM RPF check function (col 14/lines 66-col 15/line 9, col 18/lines 13-18).

It would have been obvious to one ordinary skilled in the art at the time the invention was made to incorporate performing PIM RPF check routine as taught by Haggerty, motivation would be to prevent loops in the spanning trees, as taught by Haggerty.

Regarding claims 11-12, reverse path forwarding in sparse mode and reverse path forwarding in dense mode (Haggerty: col 14/lines 55-col 15/line 9).

Regarding claim 5, constructing the multicast routing table comprises determining if a router is a multicast router by determining if its corresponding received packet is a multicast packet (Haggerty: col 6/lines 12-22).

**Citation of Pertinent Art:**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure; Copies of documents cited will be provided as set forth in MPEP § 707.05(a):

Ref A: IP Multicast Configuration Guide, July 199, pages 1-14.

Cisco teach wherein Protocol Independent Multicast routing relies on the unicast routing tables to assist populating of its multicast routing tables (page 8, left column); constructing a multicast routing table and a unicast routing table from the received link state packets, and tables corresponding to a short path tree through multicast routers, the table constructed from packets corresponding a short path tree through multicast routers (pages 1-4).

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prieto, B. whose telephone number is (703) 305-0750. The Examiner can normally be reached on Monday-Friday from 6:00 to 3:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's Supervisor, Mark R. Powell can be reached on (703) 305-9703. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-6606. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3800/4700.

Any response to this action should be mailed to:  
Commissioner of Patents and Trademarks  
Washington, D.C. 20231

or Faxed to:

(703) 746-7239, for Official communications and entry

Or:


(703) 746-7240, for Non-Official or draft communications, please label  
"PROPOSED" or "DRAFT".

Or Telephone:

(703) 306-5631 for TC 2100 Customer Service Office.

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington VA, Fourth Floor (Receptionist), further ensuring that a receipt is provided stamped "TC 2100".

B. Prieto  
TC 2100  
Patent Examiner  
June 6, 2003

  
MARK POWELL  
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